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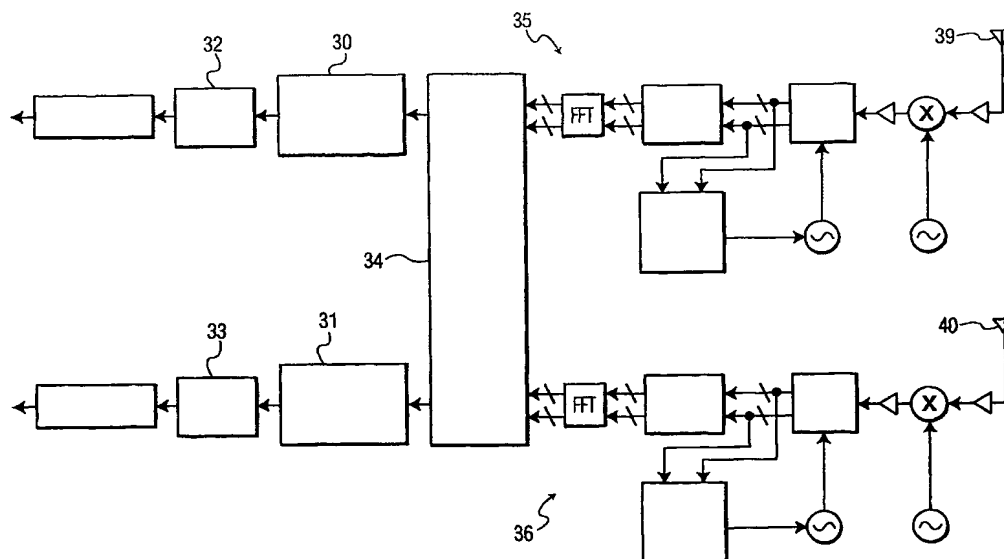
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[Continued on next page]

(54) Title: A SIMPLIFIED DECODER FOR A BIT INTERLEAVED COFDM-MIMO SYSTEM



(57) **Abstract:** Multiple input multiple output (MIMO) systems are candidates for higher data rate wireless communication systems. Currently, for a single input single output (SISO) IEEE 802.11a system can provide a transmission data rate up to 54Mbps. The present invention is a 2 by 2 Multiple In Multiple Out (MIMO) system having a decoding apparatus that increases the data rate to over 100Mbps but at a computation cost about the same as for optimal decoding for a SISO system and 1/64 of the optimal decoding for a 2 by 2 MIMO system. At a bit error rate (BER) of 10⁻⁴ level, the 2 by 2 MIMO system of the present invention provides double the transmission data rate of the SISO system with approximately the same signal to noise ratio (SNR).